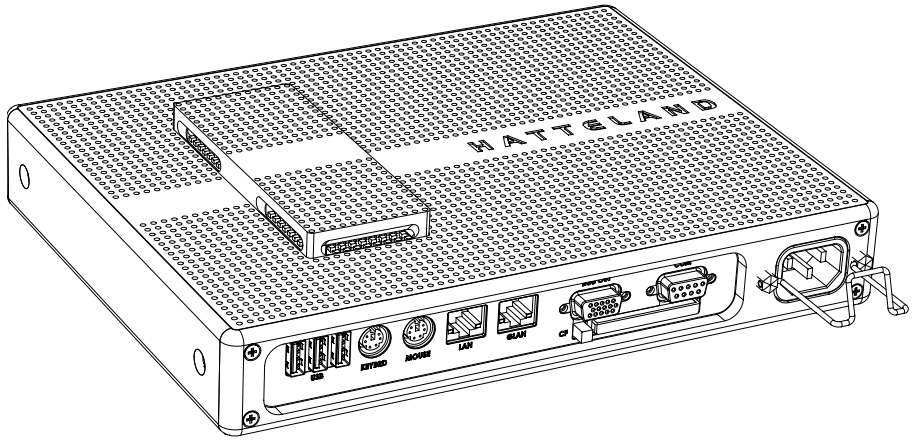
HATTELAND®
DISPLAY

USER MANUAL



Series 2 - Maritime Stand-alone Computer

HT MMC0x-A0y - Series 2 MMC Backpack Computers

Where x = processor type/speed, and y = AC or DC power.

User Manual Series 2 MMC Backpack	
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Created: 363 Approved: 6405	

Please visit www.hatteland-display.com for the latest electronic version of this manual.

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WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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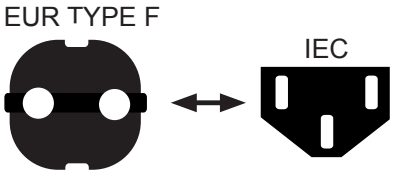
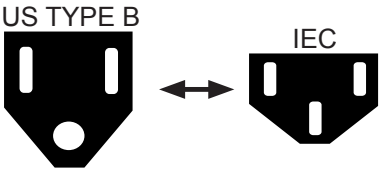
Contents of package

This product is shipped with:

Item	Description	Illustration
FS-CABLE EU	1 pcs of power cable European Type F “Schuko” to IEC. Length 1.8m *Note: Power cable not included with the DC model.*	
80099	1 pcs of power cable US Type B plug to IEC. Length 1.8m *Note: Power cable not included with the DC model.*	
MEDIA STD01	1 pcs of Documentation and Driver DVD. Contains files for motherboard, BIOS & settings. Software/Drivers for factory installed components like mainboard, IDE, network etc.	Menu and Driver browser for Microsoft® Windows®
	Test Reports papers: 1 pcs of Product Declaration 1 pcs of Computer Checklist	

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General

About this manual

The manual contains electrical, mechanical and input/output signal specifications. All specifications in this manual, due to manufacturing, new revisions and approvals, are subject to change without notice. However, the last update and revision of this manual are shown both on the frontpage and also in the “Revision History” chapter at the end of the manual.

Furthermore, for third party datasheet and user manuals, please see dedicated Documentation and Driver DVD delivered with the product or contact our sales/technical/helpdesk personnel for support.

About Hatteland Display

Hatteland Display is the leading technology provider of specialized display and computer products, delivering high quality, unique and customized solutions to the international maritime, naval and industrial markets.

The company represents innovation and quality to the system integrators world wide. Effective quality assurance and investment in sophisticated in-house manufacturing methods and facilities enable us to deliver Type Approved and Mil tested products. Our customer oriented approach, technical knowledge and dedication to R&D, makes us a trusted and preferred supplier of approved solutions, which are backed up by a strong service network.

hatteland-display.com

You will find our website full of useful information to help you make an informed choice as to the right product for your needs. You will find detailed product descriptions and specifications for the entire range on offer be it Series 1, Series 2, Computers & Panel Computers, Military solutions as well as the range of supporting accessories. The site carries a wealth of information regarding our product testing and approvals in addition to company contact information for our various offices around the world, the global service centers and the technical help desk, all ensuring the best possible support wherever you, or your vessel, may be in the world.

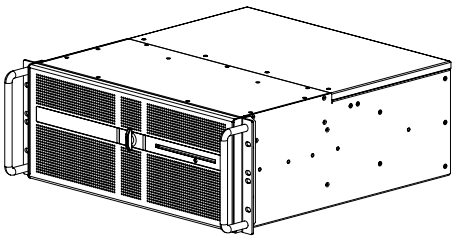
Contact Information

Head office, Vats / Norway: Hatteland Display AS Åmsosen N-5578 Nedre Vats, Norway Tel: +47 4814 2200 Fax: +47 5276 5444 mail@hatteland-display.com	**Sales office, Frankfurt / Germany:** Hatteland Display GmbH Werner Heisenberg Strasse 12, D-63263 Neu-Isenburg, Germany Tel: +49 6102 370 954 Fax: +49 6102 370 968
Sales office, Oslo / Norway: Solbråveien 20 N-1383 Asker Norway Tel: +47 4814 2200 Fax: +47 5276 5444	**Sales office, Aix-en-Provence / France:** Hatteland Display SAS 31 Parc du Golf, 350, Avenue JRGG de la Lauzière - CS 90519 13593 Aix-en-Provence Cedex 3, France Tel: +33 (0)4 42 16 35 15 Fax: +33 (0)4 42 16 35 09
Sales office, San Diego / USA: Hatteland Display Inc. 11440 W. Bernardo Court, Suite 300 San Diego, CA 92127, USA Tel: +1 858 753 1959 Fax: +1 858 430 2461	

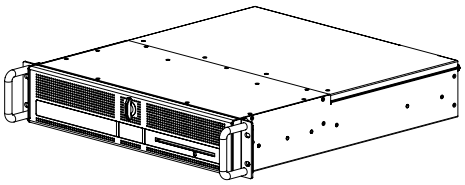
For an up-2-date list, please visit www.hatteland-display.com/locations

Computers introduction

Hatteland Display's range of type-approved computers is designed to perform in harsh environments while providing the performance and flexibility you expect. We offer rack mount and black box/standalone computer solutions for every need. Our computers are used by system integrators, boat builders and end-users and can be found on all vessel types, all over the world.

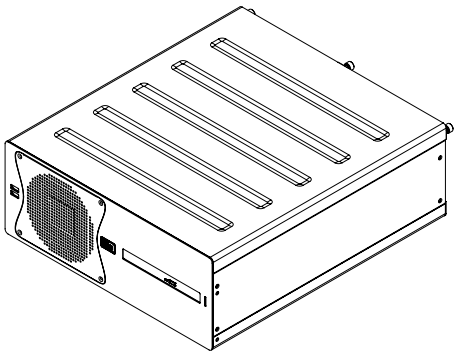


If you are looking for a high quality computer for navigation, monitoring or entertainment solutions, Hatteland Display can fulfil your high expectations at a reasonable cost.



Our computer range covers all eventualities and requirements. We offer a wide range of processor choices, HDD and power options, and solid state technology, neatly engineered within industry standard form factors such as 19" rack mount, 2U, 3U and 4U.

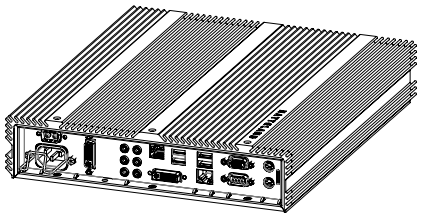
We continually develop our computers portfolio to make the best use of emerging computer technology so you can be sure that your Hatteland Display computer offers the power needed to run modern applications, with the flexibility to be installed wherever you want, for any marine use.



Designed to perform in harsh environments...

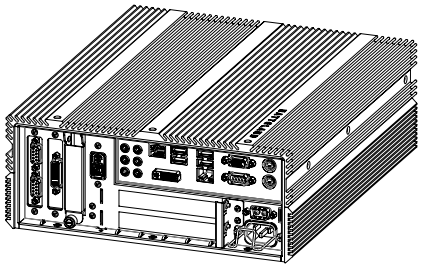
Winner of Red Dot awards 2009 / 2007

In 2009 the Hatteland Display HT C01 standalone computer won a prestigous Red Dot Award with Honourable Mention distinction, sucessfull detail solution.



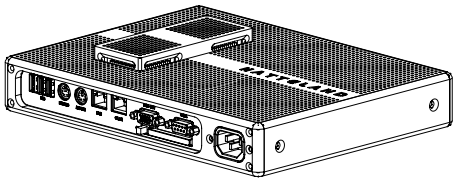
The Design Zentrum Nordrhein Westfalen in Germany has been marking outstanding international product design with its famous and highly regarded dot since 1955. The Red Dot Product Design Award is an annual international awards scheme where products from all industries are chosen for their innovative visual and industrial design.

In 2007 the Hatteland Display Series 2 Display/Panel Computers range won the Red Dot Award for the overall design and modular backpack concept, which docks into the screen at the back, comprises either the typical display connections or a fully equipped panel computer. Even the computer backpack can operate on its own as a stand-alone computer.

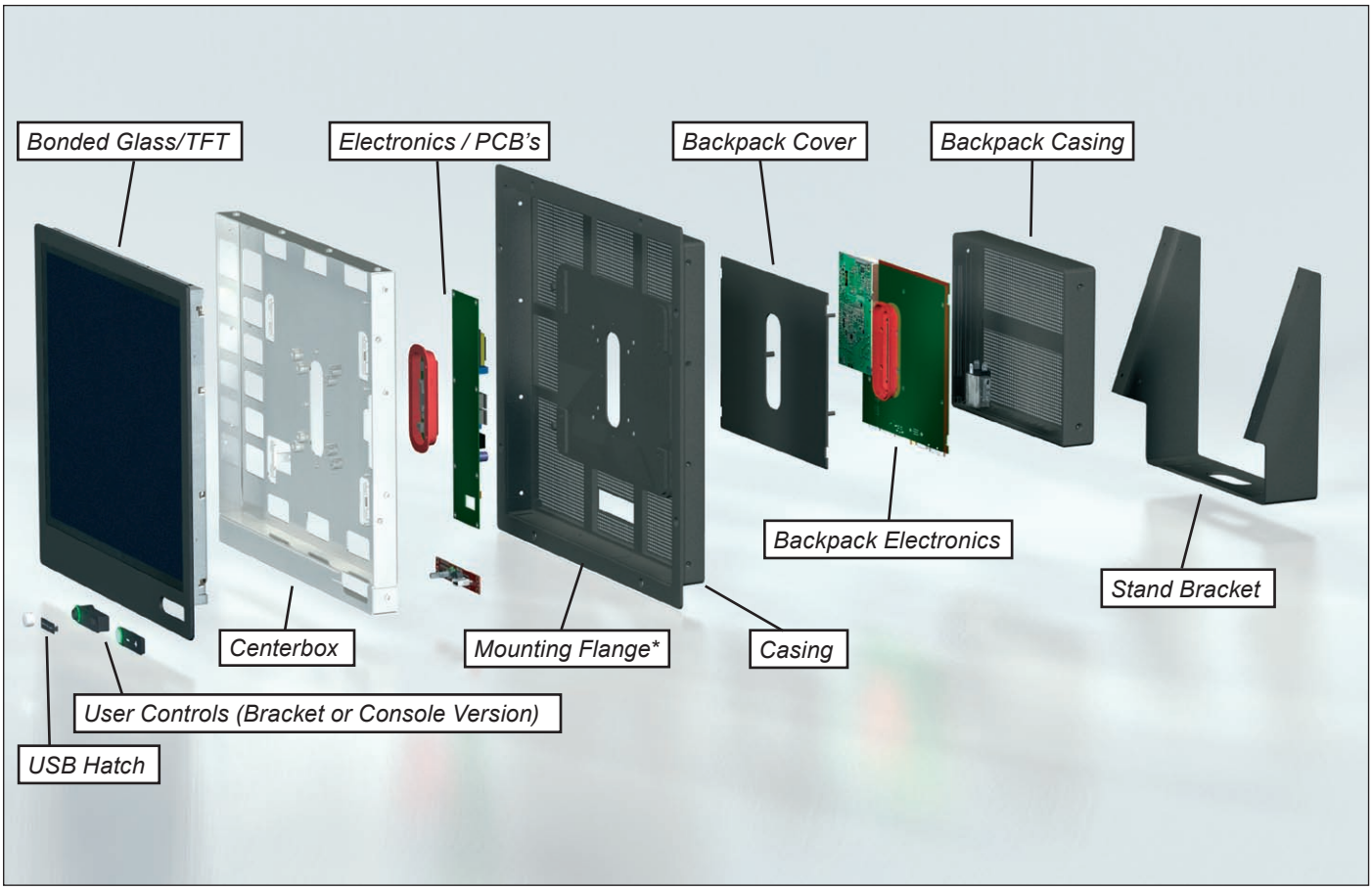


reddot design award
honourable mention 2009

reddot design award
winner 2007

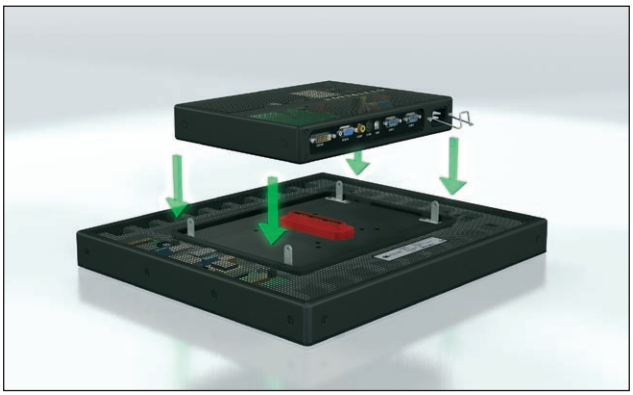


Basic Construction - Series 2

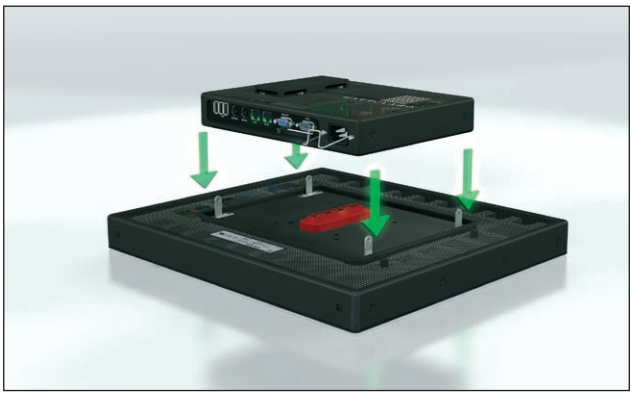


***Available with or without flange (3mm or 16mm) (factory default deliverance)**

Modular Backpack Concept - Series 2



Display and MMD2 (Display) Backpack



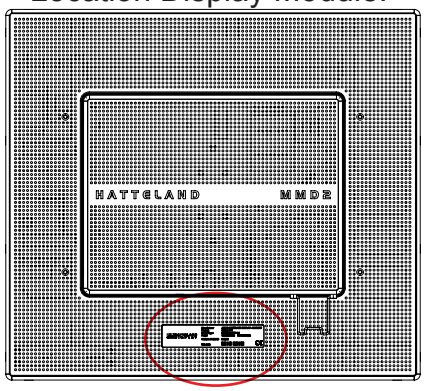
Display and MMC2 (Computer) Backpack

Product Labels (Examples)

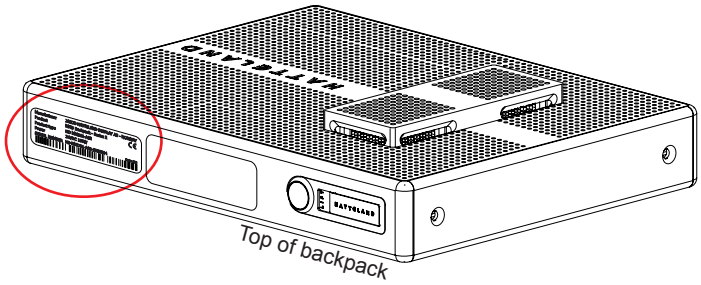
Serial Number Labels Placement

The Series 2 products are based on a modular backpack concept, which allows users to easily change the functionality. Both the display modules and the backpack modules are by factory default labelled with unique labels. These are located as illustrated below.

Location Display Module:

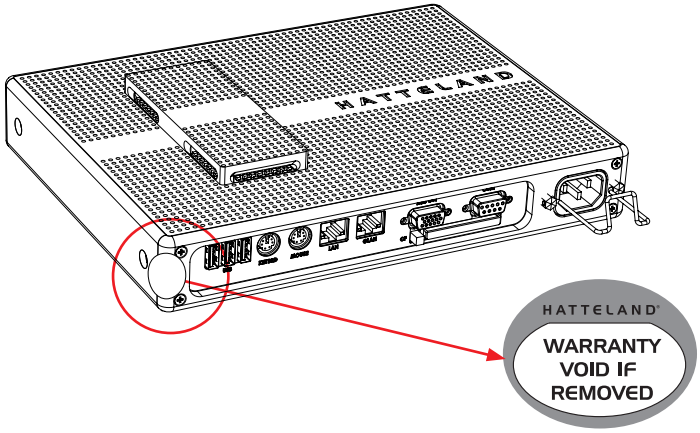


Location Backpack Module:



Warranty Label

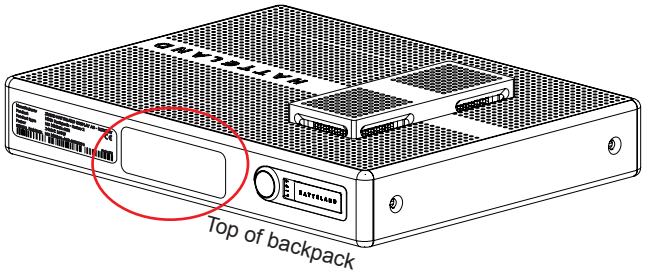
If you are to perform service on a unit still under warranty, any warranty will be void if this label is attempted removed / re-glued or removed completely. This label is located on the product as shown in illustration.



Windows® OEM Certificate of Authenticity (COA)

Applies for products after JAN 2007.

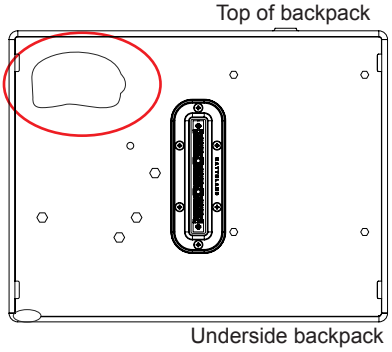
On the Series 2 MMC (computer backpack), a COA label for the operating system license is placed as shown in illustration.



Windows® OEM Certificate of Authenticity (COA)

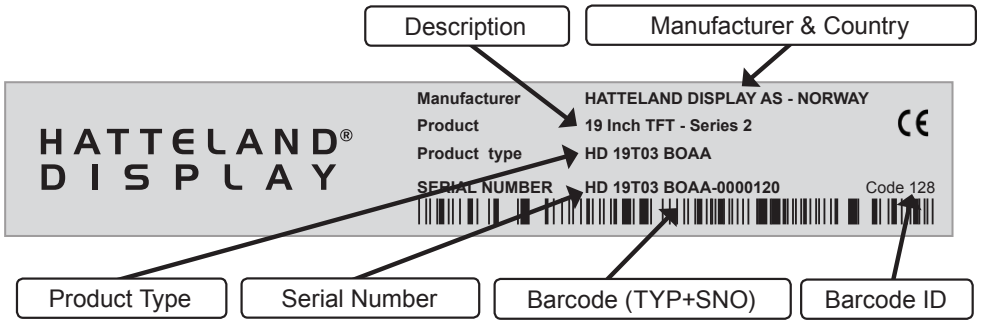
Applies for products produced before FEB 2007.

On the Series 2 MMC (computer backpack), a COA label for the operating system license is placed as shown in illustration.



Product Labels (Example)

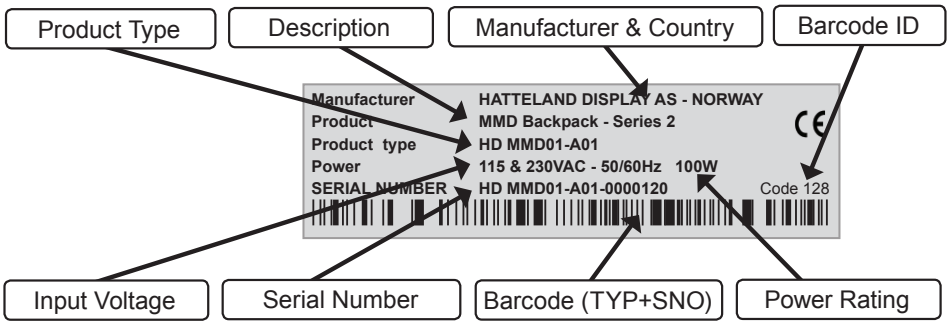
Serial Number Label Layout (Display Module)



Serial Number Label Nomenclature (TFT Module)

```
HD yyxyy xxxx-yyyyyyy   NOMENCLATURE - y=numbers, x=Letters
HD 19T03 BOAA-0000120   Example
|| ||||| |||| |||||||
|| ||||| |||| ¤¤¤¤¤¤¤-- Serial Number ID, 7 digits
|| ||||| |||¤---------- Factory Mounted Option ID (A=Standard, C=Touch Screen)
|| ||||| ||¤----------- User Interface Type ID (A=Std+USB, B=IP66)
|| ||||| |¤------------ Glass/TFT Technology ID (O=Optically Bonded)/Reserved ID
|| ||||| ¤------------- Mechanical Version ID (B=Bracket, C=Console, F=Flange)
|| ||¤¤¤--------------- TFT (Thin Film Transistor)/Electronics Revision ID
|| ¤¤------------------ Display Size (inch)
¤¤-------------------- Manufacturer ID / Product Series ID
```

Serial Number Label Layout (Backpack Module)



Serial Number Label Nomenclature

```
HD xxxyy-xyy-yyyyyyy    NOMENCLATURE - y=numbers, x=Letters
HD MMD01-A01-0000128    Example
|| ||||| ||| |||||||
|| ||||| ||| ¤¤¤¤¤¤¤--- Serial Number ID, 7 digits
|| ||||| ||¤----------- Power Input (1=AC - 115&230VAC / 2=DC - 24VDC)
|| ||||| |¤------------ Electronics / Mainboard Revision ID
|| ||||| ¤------------- Sub Version ID (A=Standard, C=Touch Support) / Reserved ID
|| |||¤¤--------------- Processor Type+Speed ID / Reserved ID
|| ¤¤¤----------------- Backpack Technology Type (MMD/MMC) ID / Reserved ID
¤¤-------------------- Manufacturer ID / Product Series ID
```

Installation

General Installation Recommendations

Installation and mounting of computers

1. Units may be intended for various methods of installation or mounting (rack mounting, panel mounting, bracket mounting, ceiling/wall mounting); for details, please see the relevant mechanical drawings.
2. Adequate ventilation is a necessary prerequisite for the life of the unit. The air inlet and outlet openings must definitely be kept clear; coverings which restrict ventilation are not permissible. The product might be without any ventilation aperatures which means pt.2 does not apply.
3. Exposure to direct sunlight can cause a considerable increase in the temperature of the unit, and might under certain circumstances lead to overtemperature. This point should already be taken into consideration when the bridge equipment is being planned (sun shades, distance from the windows, ventilation, etc.)
4. Space necessary for ventilation, for cable inlets, for the operating procedures and for maintenance, must be provided.
5. To further improve the cooling of the unit we recommend installing Cooling Fans underneath blowing upwards into the unit air inlet. This may be required in high temperature applications and also when there is reason to expect temperature problems due to non-optimal way of mounting.
6. For DC powered computer units proper grounding must be achieved by connecting a wire from the unit's ground (GND) screw (as indicated on the unit with a ⏚ icon) to the grounding in your installation setup.

   The wire should have a cross sectional area of at least 6mm$^{2.}$ The GND screw is located near the other I/O connectors. Please review the "Physical Overview" chapter for further help.

General mounting instructions

1. The useful life of the components of all Electronics Units generally decreases with increasing ambient temperature; it is therefore advisable to install such units in air-conditioned rooms. If there are no such facilities, these rooms must at least be dry, adequately ventilated and kept at a suitable temperature in order to prevent the formation of condensation inside the unit.
2. With most Electronic Units, cooling takes place via the surface of the casing. The cooling must not be impaired by partial covering of the unit or by installation of the unit in a confined cabinet.
3. In the area of the wheel house, the distance of each electronics unit from the magnetic standard compass or the magnetic steering compass must not be less than the permitted magnetic protection distance. This distance is measured from the centre of the magnetic system of the compass to the nearest point on the corresponding unit concerned. The exact distance is often mentioned in the specific product specifications.
4. Transportation damage, even if apparently insignificant at first glance, must immediately be examined and be reported to the freight carrier. The moment of setting-to-work of the equipment is too late, not only for reporting the damage but also for the supply of replacements.

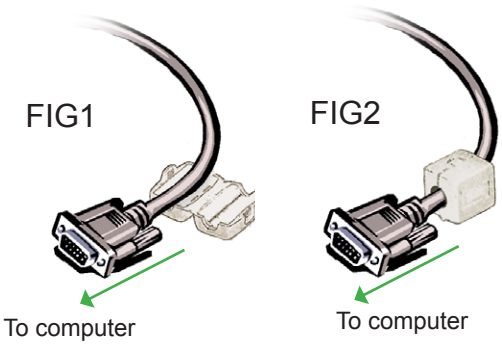
Cables

Use only high quality shielded signal cables. For RGB/DVI cables use only cables with separate coax for Red, Green and Blue.

Ferrites

On selected products, the ferrites prevent high frequency electrical noise (radio frequency interference) from exiting or entering the equipment. To verify if your product require this, please see the "Physical Overview" chapter in this manual. The ferrites are part of the contents of the package also specified in the "Contents Of Package" chapter early in this manual. **The ferrites must be mounted on specific cables to fully comply with the Type Approvals!**

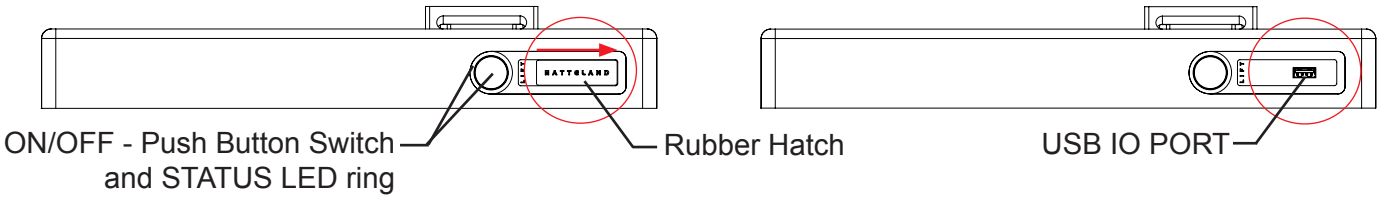
The ferrites should be mounted (clipped in place on the cable as shown in illustration) as close as possible to the cable connector on the rear side of the computer product. Open up the ferrite, place the cable inside as shown in FIG1, and then gently close it until a click can be heard (FIG2).



Operation

Physical Connections - Series 2 MMC Backpack

Front area of backpack (illustration)



Introduction:

The MMC Backpack - Series 2 can operate as a stand-alone computer without beeing mounted or connected to the main display module. If mounted or connected to the main display module, the power on/off switch will have the same function on both the MMC backpack and on the main display module in front.

Power ON:

To turn the unit on, push the navigator knob/button inwards.

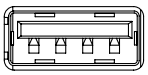
Power OFF:

To turn the unit off, push the navigator knob/button inwards and hold it down for 4 seconds. The operating system may require additionally tasks to be performed before computer shuts down and turns off the unit.

Also read the STATUS LED overview earlier in this manual.

Rubber Hatch:

The rubber hatch IS NOT designed to be removed, but lifted/bended away as the arrow above shows. Use a pen, nail or similar to open the hatch. The rubber hatch can later be pushed back into place when the USB front connector is not in use.



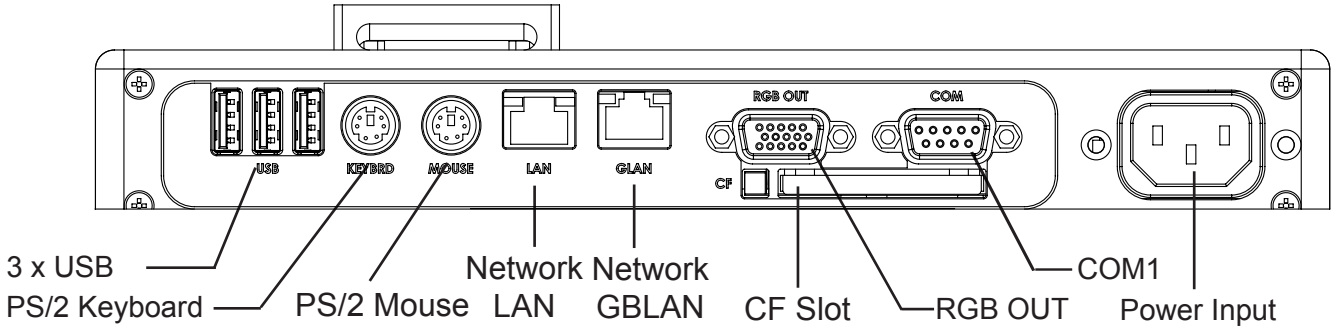
1 x USB INPUT/OUTPUT:

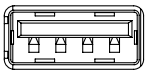
Behind the HATTELAND® rubber hatch you will find a USB IO port. Supports any USB1.1 (12Mbps) or USB2.0 (480Mbps) compliant peripherals. Drivers for most USB devices are useally included in operating system or on separate installation CD's delivered with product. USB 1.1 devices will operate in USB 1.1 mode (12 Mbps).

NOTE: Do NOT exceed the maximum current limit on a USB port. (500mA)

Physical Connections - Series 2 MMC Backpack

Connection area of backpack (illustration)

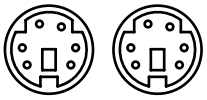




3 x USB INPUT/OUTPUT:

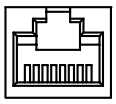
Supports any USB1.1 (12Mbps) or USB2.0 (480Mbps) compliant peripherals. Drivers for most USB devices are useally included in operating system or on separate installation CD's delivered with product. USB 1.1 devices will operate in USB 1.1 mode (12 Mbps).

NOTE: Do NOT exceed the maximum current limit on a USB port. (500mA)



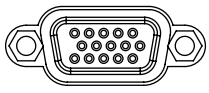
PS/2 Keyboard and PS/2 Mouse INPUTS:

Connect the PS/2 keyboard cable to the PS/2 5P Connector (female) marked with a keyboard icon in the metal casing. Connect the PS/2 mouse cable to the PS/2 5P Connector (female) marked with a mouse icon in the metal casing. Also check the illustration above to determine its locations.



Network LAN/GBLAN INPUTS/OUTPUTS:

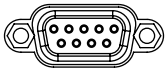
Supports 10/100Mbps Ethernet (LAN) and 10/100/1000Mbps Ethernet (GBLAN). Suitable for twisted pair cables CAT.5E. Make sure the network cable connector "clicks" into the RJ-45 connector.



RGB OUT:

Will output a clone signal from the computer for use with external display or monitor. Connects via a High Density D-SUB 15P Female connector. Fasten the cable to the connector using the provided screws on the cable housing itself.

Physical Connections - Series 2 MMC Backpack



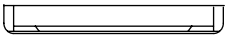
COM1:

A 9PIN D-SUB Female connector that supports RS232/422/485 (all optically isolated). Initially by factory default this has set to operate in RS232 mode. Via software (**MMC2 Utility***), COM1 can be configured to operate in either RS422 or RS485 as well.

***Note:** The **"MMC2 Utility"** software is preinstalled by factory default. You will find the icon on the operating system start menu. For usage, please read the chapter: **"HATTELAND® MMC2 Utility - Series 2"** in this manual.

COM2 SERIAL CONTROL INTERFACE:

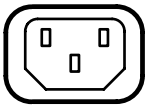
This is only an internal serial port and is indentified in the operating system as "COM2". This will allow you to control brightness and retrieve various parameters, as well as configuring the communication mode for COM1 (RS232/422/485). For in-depth information, manual is available on this link:
http://www.hatteland-display.com/pdflink/inb100018-2.php



CompactFlash Reader: (Not plug & play)

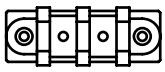
CompactFlash Reader supports Type I & II cards. Insert the card gently into the slot with the logo facing upwards (only when the unit is OFF). The card is removed by pressing the EJECT button next to the card slot. A wide range of card sizes are supported. The compact flash will be recognised as Primary IDE SLAVE. The selection of MASTER / SLAVE setting for the compact flash is jumper configurable.

NOTE: DO NOT ATTEMPT TO REMOVE THE FLASH CARD WHILE THE UNIT IS OPERATING! This is because the CF Slot has been configured to operate as a IDE device. If the Flash Card is removed from the slot while the unit is on, data may be lost or partly corrupted.



POWER INPUT: (AC Version)

The internal AC power module supports both 115VAC & 230VAC - 50/60Hz power input. You may secure the connector further by using the clamp mounted on the connector base.



POWER INPUT: (DC Version)

Secure the cables (check polarity on your model, marked on the label) to the screw terminal. The internal DC power module supports 24 VDC nominal (18-36VDC).

Specifications

Note: All specifications are subject to change without prior notice!

TECHNICAL DESCRIPTION

Global Computer Specifications:

- Installed OS : Microsoft® Windows® XP Professional w/SP2
- Flash Drive : 4GB 2.5" Flashdrive ATA-3
- Compact Flash : Type I & II Compatible (with eject button)

Additional computer specifications are explained in table below.

Power Specifications:

Power Supply Options & Type Number:
- 115&230VAC - 50/60Hz : HT MMC0x-A01*
- 24 VDC : HT MMC0x-A02*

Power Consumption:
- Operating : TBD (Max) (CPU @ 100%)

Processor Board / Backpack Options:

HT MMC01-A0y:*
- Processor : Intel®Pentium®M 1.6GHz Low Voltage, 2MB L2 Cache
- Front Side Bus : 400Mhz
- Chipset : Intel® 855GME
- VGA : Intel® Extreme Graphics2 with 2D/3D Graphics
- BIOS : Award 2Mbit Flash BIOS
- IDE Interface : Enhanced IDE UDMA 33/66/100
- Memory : 1 x DDR333Mhz ECC 512MB (Max 1GB)

HT MMC03-A0y:*
- Processor : Intel®Celeron®M 600MHz, ULV, Zero-Cache
- Front Side Bus : 400MHz
- Chipset : Intel® 852GM
- VGA : Intel® Extreme Graphics2 with 2D/3D Graphics
- BIOS : Award 2Mbit Flash BIOS
- IDE Interface : Enhanced IDE supports UDMA 33/66/100
- Memory : 1 x DDR333Mhz ECC 512MB (Max 1GB)

HT MMC04-A0y:*
- Processor : Intel®Pentium®M 1.6GHz Low Voltage, 2MB L2 Cache
- Front Side Bus : 400Mhz
- Chipset : Intel® 855GME
- VGA : Intel® Extreme Graphics2 with 2D/3D Graphics
- BIOS : Award 2Mbit Flash BIOS
- IDE Interface : Enhanced IDE UDMA 33/66/100
- Memory : 1 x DDR333Mhz ECC 1GB

***Format HT MMC0x-A0y:**
x = Processor Option, **y** = AC or DC Option

MECHANICAL DESCRIPTION

Physical Dimensions:

- 260 (W) x 40 (H) x 200 (D) mm - 10.24" (W) x 1.57" (H) x 7.87" (D)
- Weight: 1.8kg (approx)

User I/O Ports:

- USB I/O : 3 x USB 2.0 TYPE A
- USB I/O : 1 x USB 2.0 TYPE A (in front, under hatch)
- PS/2 Keyboard : 1 x PS/2 (female)
- PS/2 Mouse : 1 x PS/2 (female)
- Network LAN : 1 x RJ45 - 10/100Mbps
- Network GBLAN : 1 x RJ45 - 10/100/1000Mbps
- RGB OUT : 1 x 15Pin HD D-SUB (female)
- COM1 External : 1 x D-SUB 9P (male) - RS232/RS422/RS485
- Compact Flash : 1 x CF-Slot with eject button
- If AC Power IN : 1 x Std IEC Inlet (female)
- If DC Power IN : 1 x Screw Terminals
- COM2 Internal : Serial Control Interface

User Controls (in front):

- Navigator : On/Off - Push Button Switch
- Navigator Indicator : Mode Status LEDs

Environmental Considerations:

- Operating : Temperature -15 deg. C to +55 deg. C
  Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  Humidity up to 95%

Safety Considerations:
Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories/Options:

- HD TBR BPM-A1 - Backpack Mount Bracket
- HD xxT0x xxxx - Stand-alone display unit in all sizes available*

** When combined with backpack you wil have a complete functional Maritime Multi Computer (panel computer). Please see separate datasheet for display unit specifications.*

Compass Safe Distance:	HT MMC0x-A0x	Standard: 25cm	Steering: 15cm

APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

EN60945 4th (IEC945 4th) **IACS E10**
DNV - Det Norske Veritas
BV - Bureau Veritas
ABS - American Bureau of Shipping
GL - Germanischer Lloyd
LRS - Lloyd's Register of Shipping

Technical Drawings

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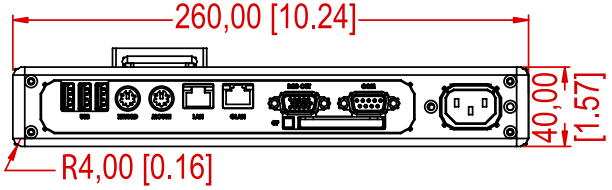
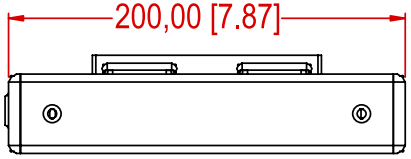
HATTELAND STANDARD	Created by:	Date:	Modified by:	Date:	Revision
	4701	23-09-2004	-	-	1
Material type and Quality:	Surface treatment:				
Aluminium 5052; standard EN 485-2 (1 & 2) St-37 Alu/Zink; standard EN 10215 (1) Stainless Steel AISI 316 L; standard EN 4404	(1) TRIKATION (Zinc/Mangan Phosphatizing) (2) Powder coating RAL 9011 EPOXY STRUCTUR Du Pont: EP0301-4950327				
Welding specification	Tolerance:				
NS-EN-288-4	ISO 2768-1 middel				
Sheet metal fasteners:					
PSM International or equivalent (www.psminternational.com)					

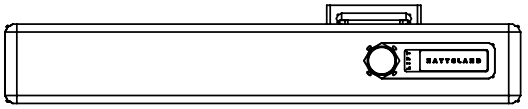
FRONT VIEW



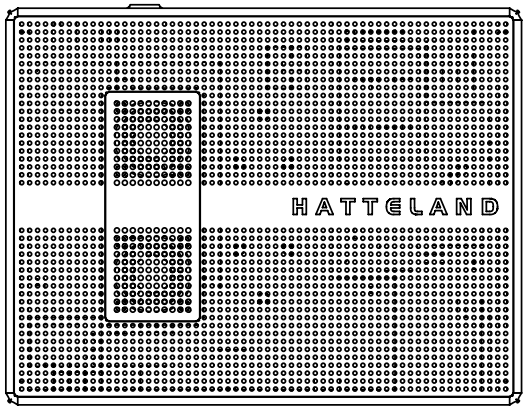
SIDE VIEW



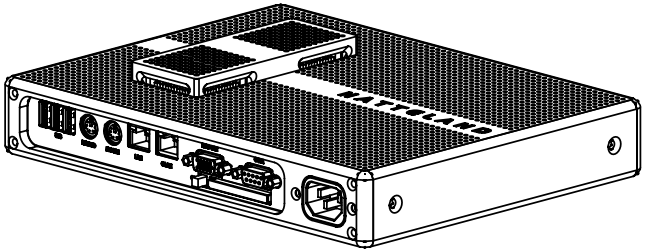
BACK VIEW



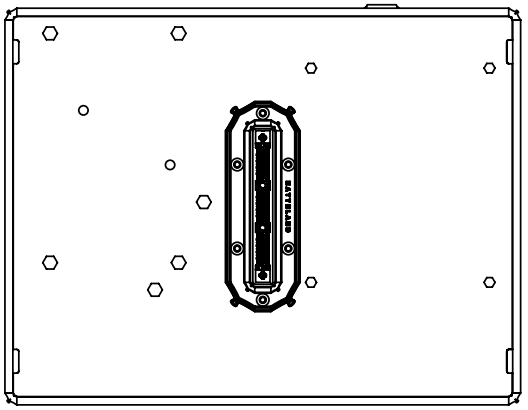
TOP VIEW



ISOMETRIC VIEW



BOTTOM VIEW



Units: mm [inches]

SALES DRAWING HT MMC

HT MMC01-A02, DC power shown in this drawing, but measurements generally apply for all MMCxx-xxx models.

Date:	Mechanical Designer	Projection:	Size: A3 Format	
19-04-2005	4701		Scale:	1:2.5

HATTELAND® DISPLAY

Hatteland Display AS
Åmsosen
N-5578 Nedre Vats

Colour code:	Approved by: --	Revision: 1
Surface treatment:	Drawing number: A000800-1	

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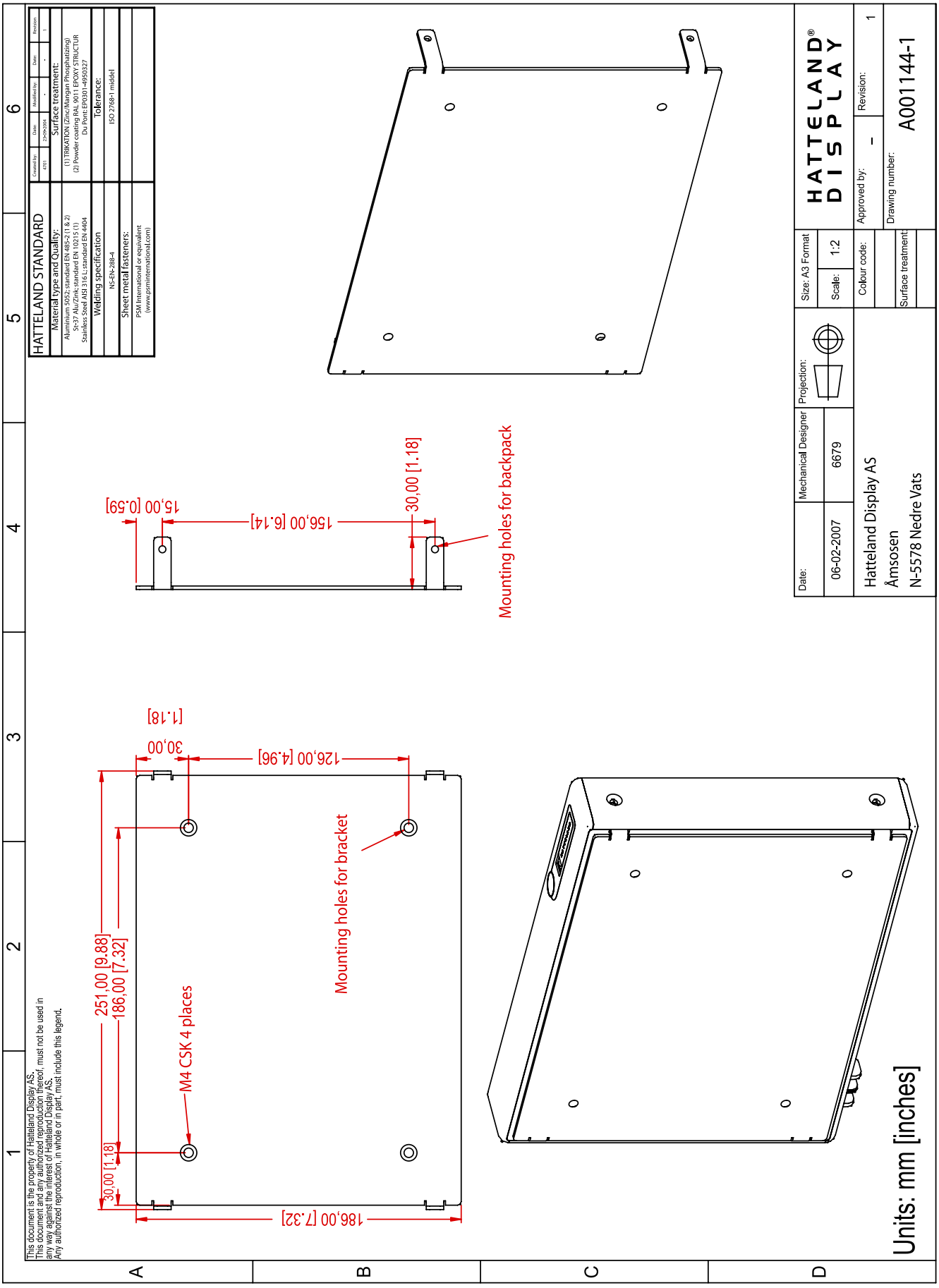
Technical Drawings - Accessories

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.



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Appendixes

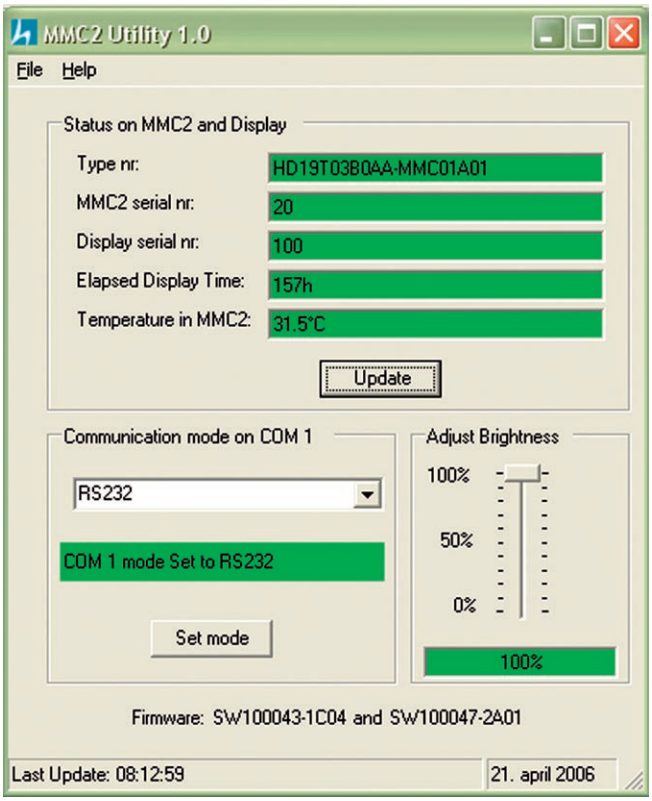
Usage and function of software

MMC2 Utility is a Windows program for reading the status for a complete Series 2 product (display module & backpack combined). You can also adjust brightness and set the communication mode on the COM 1 port.

When you start the program the program will gather information from the MMC Backpack and display module and show it in the main window.

This software is preinstalled by factory default, and is available in Windows® Operating System:

"Start Menu / Programs / HATTELAND / MMC2 utility".



Input Values - Status on MMC2 and Display:

"Type nr:"	: The type nr for MMC Backpack and Display attached.
"MMC Serial nr 2:"	: MMC Backpack serial nr.
"Display Serial nr:"	: Serial nr on the Display.
"Elapsed Display Time:"	: How many hours the Display has been powered.
"Temperature in MMC Backpack:"	: Current temperature inside the MMC Backpack.
[Update] button	: Updates status. Last update time is shown in status bar.

Communication mode on COM 1:

Shows the current communication mode on COM 1. You can set a new mode by choosing another mode in the dropdown menu list.

[Set Mode] button	: Sets the mode selected from the dropdown list.

Adjust Brightness Slider:

Adjust brightness on attached Display.

Menu Options:

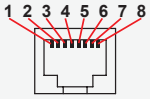
Exit	: Close the program
About	: About the program
Help	: Same help/text as this page

Pin Assignments - Common Connectors

Note: Not all connectors may be available on your specific product. This depends on the amount of additional hardware installed from factory, or customized solutions. These pin assignments are for the common connectors used. Connectors are seen from users Point Of View (POV).

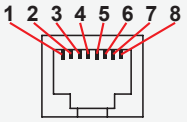
Pin Assignments - RJ45 10/100 LAN

Use category 5 - twisted pair cable



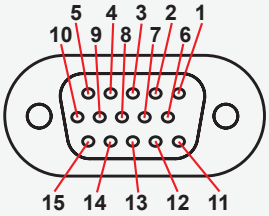
Pin 01 - TDP	Transmit Differential Pair (Positive)
Pin 02 - TDN	Transmit Differential Pair (Negative)
Pin 03 - RDP	Receive Differential Pair (Positive)
Pin 04 - NC	Not Connected
Pin 05 - NC	Not Connected
Pin 06 - RDN	Receive Differential Pair (Negative)
Pin 07 - NC	Not Connected
Pin 08 - NC	Not Connected

Pin Assignments - RJ45 10/100/1000 GBLAN



Pin 01 - D0P	Differential Pair 0 (Positive)
Pin 02 - D0N	Differential Pair 0 (Negative)
Pin 03 - D1P	Differential Pair 1 (Positive)
Pin 04 - D2P	Differential Pair 2 (Positive)
Pin 05 - D2N	Differential Pair 2 (Negative)
Pin 06 - D1N	Differential Pair 1 (Negative)
Pin 07 - D3P	Differential Pair 3 (Positive)
Pin 08 - D3N	Differential Pair 3 (Negative)

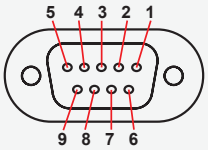
Pin Assignments - 15P HD RGB VGA



Pin 01	Red, analog
Pin 02	Green, analog
Pin 03	Blue, analog
Pin 04	Reserved for monitor ID bit 2 (grounded)
Pin 05	Digital ground
Pin 06	Analog ground red
Pin 07	Analog ground green
Pin 08	Analog ground blue
Pin 09	+5V power supply for DDC (optional)
Pin 10	Digital ground
Pin 11	Reserved for monitor ID bit 0 (grounded)
Pin 12	DDC serial data
Pin 13	Horizontal sync or composite sync, input
Pin 14	Vertical sync, input
Pin 15	DDC serial clock

Pin Assignments - 9P Serial COM RS-232

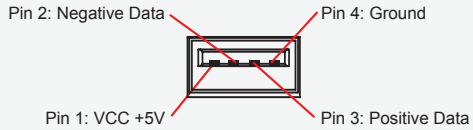
This connector is commonly used for:



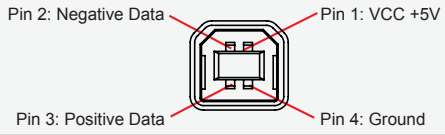
Pin 01 - DCD	Data Carry Detect
Pin 02 - SIN	Serial In or Receive Data
Pin 03 - SOUT	Serial Out or Transmit Data
Pin 04 - DTR	Data Terminal Ready
Pin 05 - GND	Ground
Pin 06 - DSR	Data Set Ready
Pin 07 - RTS	Request To Send
Pin 08 - CTS	Clear To Send
Pin 09 - RI	Ring Indicate

Note: The table above lists commonly-used RS-232 signals and pin assignments, however Serial Communication for Hatteland Display products may vary from product to product to support different end user systems. Please check additional pin assignments section in this manual for specific RS-232/RS-422/RS-485 pin assignments for your exact product.

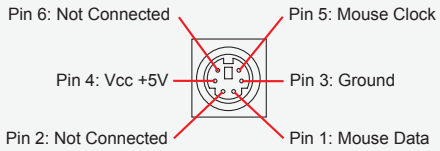
Pin Assignments - USB TYPE A



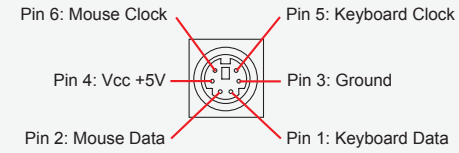
Pin Assignments - USB TYPE B



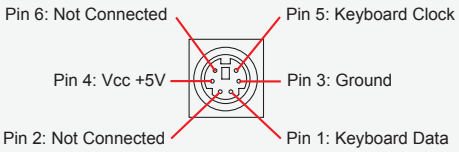
Pin Assignments - 5P PS/2 MOUSE



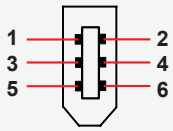
Pin Ass. - 5P PS/2 KEYBOARD+MOUSE Combined



Pin Assignments - 5P PS/2 KEYBOARD

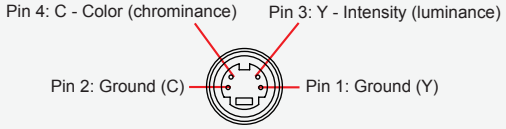


Pin Assignments - FIREWIRE IEEE-1394

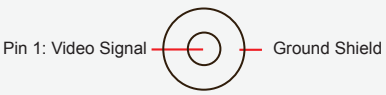


Pin 01 - VCC	Power
Pin 02 - GND	Grounding for power and inner cable shield
Pin 03 - TPB-	Twisted Pair B- Receive Strobe, Transmit Data
Pin 04 - TPB+	Twisted Pair B+ Receive Strobe, Transmit Data
Pin 05 - TPA-	Twisted Pair A- Transmit Strobe, Receive Data
Pin 06 - TPA+	Twisted Pair A+ Transmit Strobe, Receive Data

Pin Assignments - 5P S-VHS/S-VIDEO

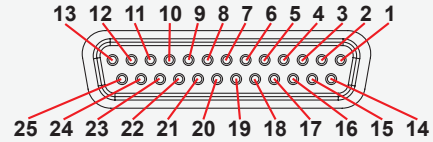


Pin Assignments - RCA/BNC 1P COMP. VIDEO



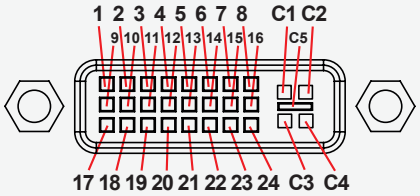
Pin Assignments - Common Connectors

Pin Assignments - 25P Parallel



Pin 01 - STROBE	This signal indicates to the printer that data at PD7..0 are valid.
Pin 02 - DATA0	Parallel data bus from PC board to printer. The data line are able to operate in PS/2 compatible bi-directional mode.
Pin 03 - DATA1	Same as Pin 02
Pin 04 - DATA2	Same as Pin 02
Pin 05 - DATA3	Same as Pin 02
Pin 06 - DATA4	Same as Pin 02
Pin 07 - DATA5	Same as Pin 02
Pin 08 - DATA6	Same as Pin 02
Pin 09 - DATA7	Same as Pin 02
Pin 10 - ACK	Signal from printer indicating that the printer has received the data and is ready to accept further data.
Pin 11 - BUSY	Signal from printer indicating that the printer cannot accept further data.
Pin 12 - PE	Signal from printer indicating that the printer is out of paper.
Pin 13 - SELECT	Signal from printer to indicate that the printer is selected.
Pin 14 - AUTO FEED	This active low output causes the printer to add a line feed after each line printed.
Pin 15 - ERR#	Signal from printer indicating that an error has been detected.
Pin 16 - INIT#	This active low output initialises (resets) the printer.
Pin 17 - SLIN#	Signal to select the printer sent from CPU board to printer.
Pin 18 - GND	Ground
Pin 19 - GND	Ground
Pin 20 - GND	Ground
Pin 21 - GND	Ground
Pin 22 - GND	Ground
Pin 23 - GND	Ground
Pin 24 - GND	Ground
Pin 25 - GND	Ground

Pin Assignments - 24P DVI-D & DVI-I



Pin 01	T.M.D.S. Data2 - (Digital - RED link 1)
Pin 02	T.M.D.S. Data2 + (Digital + RED link 1)
Pin 03	T.M.D.S. Data2/4 Shield
Pin 04	T.M.D.S. Data4 - (Digital - GREEN link 2)
Pin 05	T.M.D.S. Data4 + (Digital + GREEN link 2)
Pin 06	DDC Clock
Pin 07	DDC Data
Pin 08	Analog Vertical Sync (DVI-I only)
Pin 09	T.M.D.S. Data1 - (Digital - GREEN link 1)
Pin 10	T.M.D.S. Data1 + (Digital + GREEN link 1)
Pin 11	T.M.D.S. Data1/3 Shield
Pin 12	T.M.D.S. Data3 - (Digital - BLUE link 2)
Pin 13	T.M.D.S. Data3 + (Digital + BLUE link 2)
Pin 14	+5V Power (for standby mode)
Pin 15	Ground (for +5V and analog sync)
Pin 16	Hot Plug Detect
Pin 17	T.M.D.S. Data0 - (Digital - BLUE link 1) and digital sync.
Pin 18	T.M.D.S. Data0 + (Digital + BLUE link 1) and digital sync.
Pin 19	T.M.D.S. Data0/5 Shield
Pin 20	T.M.D.S. Data5 - (Digital - RED link 2)
Pin 21	T.M.D.S. Data5 + (Digital - RED link 2)
Pin 22	T.M.D.S. Clock Shield
Pin 23	T.M.D.S. Clock + (Digital clock + (Links 1 and 2)
Pin 24	T.M.D.S. Clock - (Digital clock - (Links 1 and 2)
Pin C1	Analog RED
Pin C2	Analog GREEN
Pin C3	Analog BLUE
Pin C4	Analog Horizontal Sync.
Pin C5	Analog Ground (return for RGB signals)

DDC = Display Data Channel /// T.M.D.S = Transition Minimized Differential Signal /// PIN C1,C2,C3,C4 = Only present on DVI-I connectors.
NOTE: Connector shows a DUAL LINK design, but some units may not support it. Only products with 1920x1200 or more in resolution require / support DUAL LINK.

Additional connector pinouts may be available in third party motherboard manuals, primarly for computers only. Please see manual/drivercd delivered with your product or own section in this user manual.

COMMON ERRORS:

If for some reason there should be something wrong with the picture quality or no picture present, check the symptoms carefully and try to cure it with the hints below:

NO PICTURE / LED BEHAVIOUR:

If there is no light at all in the LED at the FRONT, check power cables. If the LED in front is green then check if the brightness knob is turned to the right (max brightness). If still no picture, check if there is a VGA signal on the External VGA connector. If you have a picture on the external VGA connector please look in BIOS documentation/chapter for correct display settings in BIOS. Lack of image is most likely to be caused by incorrect connection, lack of power, or wrong BIOS settings.

NO SIGNAL OUT/Windows OS:

If the Backpack is booted into Windows without a display/monitor being recognized (cables disconnected, monitor turned off, or KVM switch set to other source), the graphic driver will disable the VGA/RGB output. This will result in no signal output from the unit when it enters Windows.

Rebooting the unit will not solve the problem.

To solve this problem:
- Wait for the unit to fully boot into Windows (check HDD activity LED, when it stops flashing, the unit is finished booting). If login procedure (username + password) is set up on the unit, this must first be done (type in username and password “blinded”)

- Press hotkey: CTRL + ALT + F1. This will re-enable the VGA/RGB output. This solution assumes the customer has not changed or turned off the hotkey feature within the properties for the graphic driver in Windows.

FACTORY RESET - RECOMMENDED BIOS SETTINGS:

If the processor board module or the CMOS 6V battery has been changed, the previous BIOS settings will be lost, and needs to be reconfigured. Please follow these steps:

On the main menu:
- Load optimized defaults
- Set correct time and date.

Under Standard CMOS Features:

- Drive A	= None

Under Advanced BIOS features:

- First BOOT device	= USB-CDROM
- Second BOOT device	= HDD-0
- Third BOOT device	= USB-HDD

Under Advanced Chipset Features:

- Boot display	= CRT+LFP
- Panel Number	= LVDS on module
- Integrated LAN	= Enabled

Under Integrated Peripherales:

--- Onboard device:	
* AC97 Audio	= Disable
* AC97 Modem	= Disable
* USB Keyboard support	= Enable
* USB Mouse support	= Enable
--- Super IO Device	
* Parallel port	= Normal
* PWRON After PWR Fail	= Former-Sts

Under Power Management Setup:

- Power supply settings	= ATX
- Soft-off by PWR-BTTN	= Delay 4sec.

Under PnP/PCI Configurations:

- PNP OS Installed	= Yes

Press F10 and Y to save settings and exit BIOS. Your product is now set to factory specifcations.

HATTELAND®
DISPLAY

Declaration of Conformity

We, manufacturer

Hatteland Display AS
Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD, HT STD, HD MMD, HM MMD & HT MMC product ranges is in conformity with the following standards in accordance with the EMC Directive.

Low Voltage Directive 2006/95/EC
EN 60950

EMC Directive 2004/108/EC
EN 55022 Class A
EN 55024

Signature:.....
Frode Grindheim
Vice President Product Management
Nedre Vats, Norway

Signature:.....
Arne Kristiansen
Site Manager - Test & Commission Division
Oslo, Norway

CE

CE MARK FIRST AFFIXED DATE (11 March 2010)

IND100237-1

Return Of Goods Information

Return of goods:

(Applies not to warranty/normal service/repair of products)

Hatteland Display referenced as “manufacturer” in this document.

Before returning goods, please contact your system supplier before sending anything directly to manufacturer. When you return products after loan, test, evaulation or products subject for credit, you must ensure that all accessories received from our warehouse is returned. This applies to cables, powermodules and additional equipment except screws or similar, user manual, datasheets or other written paper documents. Furthermore, the product must not have any minor / medium or severe scratches, chemical spills or similar on the backcover, front frame or glass.

This is needed to credit the invoice 100%. Missing parts will not be subject for credit, and you will not get total credit for returned product. You will either be charged separately or the amount is withdrawn from the credit. If you decide to ship the missing items on the after hand, you will get 100% credit for that particular invoice or items received at manufacturer incoming goods control. Please contact our service/sales department if additional questions

Approved packaging methods/materials:

(Applies to all shipments to manufacturer)

When returning goods, please make sure you surround the product with the following material, whenever possible: Original packaging from manufacturer, firm foam material, bubble wrap or lots of PadPack paper or Foam chips/polyester wrapped in sealed plastic bags. In any case, always use a solid cardboard box to surround everything.

Not approved packaging methods/materials are: Foam chips, expanded polyester, clothes, nothing, or too little, or anything that will crumble and get into the ventilation holes of products and cardboard boxes that are not suitable to secure the product during shipment.

Terms Of Sale And Delivery

1) APPLICATION
The terms of sale and delivery apply for Hatteland Display.

2) PRICE

a) The price is per each, if nothing else has been stated, VAT not included. Price is based on the prices from our suppliers, current custom rates, taxes, rate of exchange and international raw material prices. We reserve ourselves the rights to adjustments in case of alternation on the above mentioned.

b) Included in the price is the supplier's standard packing. In case of re-packing/smaller quantities we reserve ourselves the right to add an additional sum for warrantable packing according to CECC 0015 (Basic inspection for protection of electrostatic sensitive devices)

3) VALIDITY
If nothing else has been stated in our quotation, the offer is valid for 30 days from the date of quotation.

4) PACKAGE QUOTATION
A package quotation means that all the components offered, must be ordered by us. If one component or more are removed from the quotation, the prices given in the package quotation are not valid.

5) TERMS OF PAYMENT
Cash on delivery or payment in advance. Net granted for companies, schools and institutions only, according to agreement. In case of too late payment 1.5% interest/month will be charged. Seller has mortage rights in the goods delivered until the purchase price, additional interests and charges have been paid in full. Accepted bill is not considered as payment until it has been honoured in full.

6) TIME OF DELIVERY
The quoted time of delivery is based on information from our suppliers. We disclaim any responsibility for the consequences of any delay or cancellation from our suppliers. Belated delivery gives not solely the right for cancellation.

7) DELIVERY POINT OF TIME
Goods are considered delivered to customer when handed over to charterer.

8) FREIGHT / PACKING / FORWARDING FEE
Hatteland Display AS charge NOK 50,- in forwarding fee for orders below NOK 1000,-.
Freight charge according to expenses for orders above NOK 1000,-. VAT not included.

9) COMPLAINT
By receipt customer must check goods for obvious defects which have to be claimed within 8 days from receipt. Otherwise acceptance of complaint can not be counted on.

10) GUARANTEE / SERVICES
Time of guarantee is calculated from our date of shipment, and applies to the extent that we are covered by our supplier's guarantee regulations. The guarantee does no longer apply if:

I) there has been encroached upon the goods without seller's consent
II) terms of payment is not fulfilled
III) the goods have been damaged due to unskilled treatment
IV) components which are sensitive for static electricity have not been unpacked and treated in a secure way.

Minimum requirements: CECC 00015's standards for handling of such components. The guarantee does not include fair wear and tear.

11) RESPONSIBLITY
Seller undertake to deliver faultless and functional capable goods according to existing technical specifications. Seller disclaim responsibility for any damage or loss which directly or indirectly may be caused due to failure or defect with the delivered goods, if carelessness from the seller can be limited up to the cost of the goods. The supplier's responsibility for defects with the supplied goods do not include secondary damage or loss.

12) CANCELLATION / RETURN
Binding sales contract is concluded when we have confirmed customer's purchase order. Any disagreements in our order confirmation must be reported to seller within 6 days. The agreement can not be altered without our permission, after acceptance from our supplier. If goods are wanted to be returned, a Return No must be assigned from seller. Returned goods without a Return No will not be accepted. By return of stock listed goods, 20% return fee is charged. Returned goods are shipped on customer's account and risk.

13) LOAN, RENT and DEMO
When borrowing of goods for demo/test, the date of return must be added to the document. If no date has been stated, date of return is two weeks from the date of the document. Before return, seller must be contacted for a Return No (RTK). Goods which have been sold with an agreed right of return within stated terms, shall also have a Return No. The Return No must be obtained before the stated date of return. Returned goods without a Return No, or which have not been packed in original packing, will not be accepted.

14) LIMITATIONS
If any of our suppliers claim limited delivery terms towards us, our terms of delivery will be restricted according to those.

15) SOFTWARE
Sold or borrowed software is not allowed to be copied or spread in other ways, without a written permission.

16) RE-EXPORT
Goods delivered from seller may be subject to special rules of exportation in their supplier's native country. Buyer is responsible to obtain necessary permissions for further export/re-sale.

17) QUESTION IN DISPUTE
To settle any dispute the Karmsund Herredsrett is approved the legal venue.

INSTRUCTIONS FOR THE CONSIGNEE

1) CONTROL
Control the goods immediately by receipt. Examine the quantity towards the invoice/packinglist/shipping documents. Look for outward defects on the packing which may indicate damage on or loss of contents. Control the container and the seals for any defects.

2) SECURING EVIDENCE
When defects on the goods have been found, evidence must be secured, and seller must be informed. Call the transporter and point out the defects. Add a description of the defects on the goods receipt, the forwarder's copy of the way-bill or on the driving slip.

3) RESCUE
Bound the damage. Try to restrict the damage and the loss. Seller will compensate expences incurred due to reasonable security efforts in addition to damage and loss.

4) COMPLAINT
Write immediately a complaint to the transporter or his agent. Forward immediately the complaint to the transporter or his agent, and hold the transporter responsible for the defects. The complaint must be sent at the latest:

- for carriage by sea: within 3 days
- for overland / air transportation within 7 days

5) DOCUMENTATION
For any claims the following documentation is required, and must be forwared to the company or their agent: invoice, way-bill and/or bill of landing, and/or statement of arrival, inspection document, besides a copy of the letter of complaint to the transporter.

Notes

Revision History

Rev.	By	Date	Notes
1	SE	27 Feb 2007	First release, User Manual for MMC2 backpack when used as a stand-alone computer.
2	SE	22 Jun 2007	Changed book ID number to INB100035-1
3	SE	19 Jul 2007	Revised specifcations (type approval) Revised general text elements where needed.
4	SE	18 Oct 2007	Specifications revised (ABS type approved) and Intel® Pentium®M 2.0Ghz cpu now added as option. Revised wrong type numbers in manual for backpack from HT MMC01-xxx to HT MMC0x-A0x to reflect sales standard.
5	SE	24 Oct 2007	Specifications revised (GL type approved)
6	SE	07 Apr 2008	Revised Contents of Package chapter (power cables). Revised specifications (Environmental considerations) Revised company profile and company logos.
7	SE	09 Oct 2008	Added inches to all drawings and specs. Revised specifications regarding 2.0GHz CPU
8	SE MM	22 May 2009	Changed location of Warranty Label
9	KEO SE	30 Nov 2009	Revised Contents of Package chapter (text/typenumbers) page 5 Added introduction to computers chapter page 9 Revised specifications regarding MMC04 (1GB mem) page 20
10	SE	31 Mar 2011	Revised Contents of Package (Documentation and Driver DVD/User Manual) (page 5) Revised company related (page 1, 8)